

US-PAT-NO: 6210885

DOCUMENT-IDENTIFIER: US 6210885 B1

TITLE: Modifying double stranded DNA to enhance  
separations by matched ion  
polynucleotide chromatography

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US-CL-CURRENT: 435/6; 210/198.2 ; 210/635 ; 210/656 ;  
210/685 ; 435/91.1  
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536/25.3 ; 536/25.32

APPL-NO: 09/ 169440

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PARENT-CASE:

CROSS REFERENCE TO RELATED CO-PENDING APPLICATIONS This  
application is a  
regular U.S. patent application under 35 U.S.C.  
.sctn.111(a) and 37 C.F.R.  
1.53(b) and claims priority from the following co-pending,  
commonly assigned  
provisional applications, each filed under 35 U.S.C.  
.sctn.111(b): Ser. No.  
60/061,445 filed Oct. 9, 1997 Ser. No. 60/063,906 filed  
Oct. 31, 1997 Ser.  
No. 60/075,720 filed Feb. 24, 1998 Ser. No. 60/103,313  
filed Oct. 6, 1998.

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Detailed Description Text - DETX:

The molded polymeric rod of the present invention is  
prepared by bulk free  
radical polymerization within the confines of a  
chromatographic column. The  
base polymer of the rod can be produced from a variety of  
polymerizable

monomers. For example, the monolithic rod can be made from polymers, including mono- and di-vinyl substituted aromatic compounds such as styrene, substituted styrenes, alpha-substituted styrenes and divinylbenzene; acrylates and methacrylates; polyolefins such as polypropylene and polyethylene; polyesters; polyurethanes; polyamides; polycarbonates; and substituted polymers including fluorosubstituted ethylenes commonly known under the trademark TEFLON. The base polymer can also be mixtures of polymers, non-limiting examples of which include poly(glycidyl methacrylate-co-ethylene dimethacrylate), poly(styrene-divinylbenzene) and poly(ethylvinylbenzene-divinylbenzene). The rod can be unsubstituted or substituted with a substituent such as a hydrocarbon alkyl or an aryl group. The alkyl group optionally has 1 to 1,000,000 carbons inclusive in a straight or branched chain, and includes straight chained, branch chained, cyclic, saturated, unsaturated nonionic functional groups of various types including aldehyde, ketone, ester, ether, alkyl groups, and the like, and the aryl groups includes as monocyclic, bicyclic, and tricyclic aromatic hydrocarbon groups including phenyl, naphthyl, and the like. In a preferred embodiment, the alkyl group has 1-24 carbons. In a more preferred embodiment, the alkyl group has 1-8 carbons. The substitution can also contain hydroxy, cyano, nitro groups, or the like which are considered to be non-polar, reverse phase functional groups. Methods for hydrocarbon substitution are conventional and well-known in the art and are not an aspect of this invention. The preparation of polymeric monoliths is by conventional methods well known in the art as described in the following references: Wang et al. (J. Chromatog. A 699:230 (1994)), Petro et al. (Ana. Chem. 68:315

(1996)), and the following U.S. Pat. Nos. 5,334,310;  
5,453,185; 5,522,994  
(to Frechet). Monolith or rod columns are commercially  
available from Merck &  
Co (Darmstadt, Germany).